



Substitute Form 1449A/PTO

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

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Sheet 1 Of 1

Complete If Known

Application Number	10/849,347
Filing Date	May 19, 2004
First Named Inventor	Robert H. Burgener, II
Group Art Unit	2822
Examiner Name	Kevin M. Picardat
Attorney Docket Number	3398.2.8

**U.S. PATENT DOCUMENTS**

Examiner Initials*	Cite No. <sup>1</sup>	Document Number Number - Kind Code <sup>2</sup> (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
KP	U1	US-6,838,308 B2	01/2005	Haga, Koichi	
KP	U2	US-6,707,074 B2	03/2004	Yoshii et al.	
KP	U3	US-5,331,655 A	07/1994	Harder et al.	
KP	U4	US-3,864,725	02/1975	Merrin, Seymour	
	U5				
	U6				
	U7				
	U8				
	U9				
	U10				
	U11				
	U12				
	U13				
	U14				

**FOREIGN PATENT DOCUMENTS**

Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document Country Code <sup>3</sup> - Number <sup>4</sup> - Kind Code <sup>5</sup> (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T <sup>6</sup>
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	F4					
	F5					
	F6					

Examiner Signature	/Kevin Picardat/	Date Considered	06/24/2006
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Examiner Name	Kevin M. Picardat
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## NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. ^	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T *
KP	O1	AULBUR, W.; Density Functional Theory: Basic Ideas & Applications; Ohio State University.	
KP	O2	LOOK, D.C., and CLAFLIN, B.; P-type doping and devices based on ZnO; 08/2003; Wiley-VCH Verlag GmbH & Co.	
KP	O3	ZUNGER, A.; Practical Doping Principles; NCPV and Solar Program Review Meeting 2003; pp. 831-835.	
KP	O4	ZHANG, S.B., WEI, S.H., and ZUNGER, A.; Intrinsic n-type versus p-type doping asymmetry and the defect physics of ZnO; Physical Review B; 01/31/2001; pp. 075205-1 – 075205-7; Volume 63; The American Physical Society.	
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KP	O11	NORTON, D.P., HEO, Y.W., IVILL, M.P., IP, K., PEARTON, S.J., et al; ZnO: growth, doping and processing; Materialstoday; 06/2004; Elsevier Ltd.	
KP	O12	LEE, E.-C., KIM, Y.-S., JIN, Y.-G., and CHANG, K.J.; First-Principles Study of p-Type Doping and Codoping in ZnO; Journal of the Korean Physical Society; 12/2001; pp. S23-S26; Volume 39.	
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KP	O14	BANDYOPADHYAY, S., PAUL, G.K., ROY, R., SEN, S.K., and SEN, S.; Study of structural and electrical properties of grain-boundary modified ZnO films prepared by sol-gel technique; Materials Chemistry and Physics; 05/17/2001; pp. 83-91; Volume 74; Elsevier Science B.V.	

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Sheet 2 Of 9		First Named Inventor	Robert H. Burgener, II
		Group Art Unit	2822
		Examiner Name	Kevin M. Picardat
		Attorney Docket Number	3398.2.8

KP	O15	WILKINSON, J., XIONG, G., UCER, K.B., and WILLIAMS, R.T.; Lifetime and Oscillator Strength of Excitonic Luminescence in Zinc Oxide; Department of Physics, Wake Forest University, Winston-Salem, NC.	
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KP	O26	ONG, H.C., LI, A.S.K., and DU, G.T.; Depth profiling of ZnO thin films by cathodoluminescence; Applied Physics Letters; 04/30/2001; pp. 2667-2669; Vol. 78, No. 18; American Institute of Physics.	
KP	O27	WASHINGTON, P.L., ONG, H.C., DAI, J.Y., and CHANG, R.P.H.; Determination of the optical constants of zinc oxide thin films by spectroscopic ellipsometry; Applied Physics Letter; 06/22/1998; pp. 3261-3263; Vol. 72, No. 25; American Institute of Physics.	
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KP	O29	KOUYATE, D., RONFARD-HARET, J.-C., and KOSSANYI, J.; Photo- and electroluminescence of rare earth-doped semiconducting zinc oxide electrodes: Emission from both the dopant and the support; Journal of Luminescence; 1991; pp. 205-210; Vol. 50; Elsevier Science Publishers B.V.	

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Sheet

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Group Art Unit	2822
Examiner Name	Kevin M. Picardat
Attorney Docket Number	3398.2.8

KP	O30	KOSSANYI, J., KOUYATE, D., POULIQUEN, J., RONFARD-HARET, J.C., VALAT, P., et al.; Photoluminescence of Semiconducting Zinc Oxide Containing Rare Earth Ions as Impurities; Journal of Luminescence; 1990; pp. 17-24; Vol. 46; Elsevier Science Publishers B.V. (north-Holland).	
KP	O31	WANG, Y.G., LAU, S.P., LEE, H.W., YU, S.F., TAY, B.K., et al.; Photoluminescence study of ZnO films prepared by thermal oxidation of Zn metallic films in air; Journal of Applied Physics; 07/01/2003; pp. 354-358; Vol. 94, No. 1; American Institute of Physics.	
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KP	O36	QADRI, S.B., KIM, H., HORWITZ, J.S., and CHRISEY, D.B.; Transparent conducting films of ZnO-ZrO <sub>2</sub> ; Structure and properties; Journal of Applied Physics; 12/01/2000; pp. 6564-6566; Vol. 88, No. 11; American Institute of Physics.	
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KP	O40	COUNIO, G., ESNOUF, S., GACOIN, T., and BOILLOT, J.-P.; CdS:Mn Nanocrystals in Transparent Xerogel Matrices: Synthesis and Luminescence Properties; J. Phys. Chem.; 1996; pp. 20021-20026; Vol. 100; American Chemical Society.	
KP	O41	STRAVREV, K., KYNEV, K., ST. NIKOLOV, G., and DYAKOVITCH, V.A.; Semiempirical Assignment of the Electron Transitions in Manganese(II)-Doped II-VI Compounds; J. Phys. Chem. Solids; 1987; pp. 841-844; Vol. 48, No. 9; Pergamon Journals Ltd.	
KP	O42	FALCONY, C., ORTIZ, A., DOMINGUEZ, J.M., FARIAS, M.H., COTA-ARAIZA, L. et al.; Luminescent Characteristics of Tb Doped Al <sub>2</sub> O <sub>3</sub> Films Deposited by Spray Pyrolysis; J. Electrochem Soc.; 01/1992; pp. 267-271; Vol. 139, No. 1; The Electrochemical Society, Inc.	
KP	O43	BACHIR, S., KOSSANYI, J., SANDOULY, C., VALAT, P., and RONFARD-HARET, J.C.; Electroluminescence of Dy <sup>3+</sup> and Sm <sup>3+</sup> Ions in Polycrystalline Semiconducting Zinc Oxide; J. Phys. Chem.; 1995; pp. 5674-5679; Vol. 99; American Chemical Society.	
KP	O44	BACHIR, S., KOSSANYI, J., and RONFARD-HARET, J.C.; Electroluminescence of Ho <sup>3+</sup> Ions in a ZnO Varistor-Type Structure; Solid State Communications; 1993; pp. 859-863; Vol. 89, No. 10; Elsevier Science Ltd.; Great Britain.	
KP	O45	CHAKRABARTI, S., GANGULI, D., CHAUDHURI, S., and PAL, A.K.; Crystalline magnesium oxide films in soda lime glass by sol-gel processing; Materials Letters; 05/2002; pp. 120-123; Vol. 54; Elsevier Science B.V.	

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KP	O46	ARKLES, B.; Commercial Applications of Sol-Gel-Derived Hybrid Materials; MRS Bulletin; 05/2001; pp. 402-407.	
KP	O47	MURRAY, C.E., NOYAN, I.C., and MOONEY, P.M.; Mapping of strain fields about thin film structures using x-ray microdiffraction; Applied Physics Letters; 11/17/2003; pp. 4163-4165; Vol. 83, No. 20; American Institute of Physics.	
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KP	O53	WANG, M., YANG, X., and WANG, F.; Properties of Sensitive Materials Mainly Composed of ZnO; J. Mater. Sci. Technol.; 2000; p. 204; Vol. 16, No. 2.	
KP	O54	BAPTISTA, J.L., and MANTAS, P.Q.; High Temperature Characterization of Electrical Barriers in ZnO Varistors; Journal of Electroceramics; 2000; pp. 215-224; Vol. 4:1; Kluwer Academic Publishers; The Netherlands.	
KP	O55	BRANKOVIC, Z., BRANKOVIC, G., POLETI, D., and VARELA, J.A.; Structural and electrical properties of ZnO varistors containing different spinel phases; Ceramics International; 2001; pp. 115-122; Vol. 27; Elsevier Science Ltd. And Techna S.r.l.	
KP	O56	TANAKA, A., and MUKAE, K.; Evaluation of Single Grain Boundaries in ZnO: Rare-Earth Varistor by Micro-Electrodes; Key Engineering Materials; 1999; pp. 235-240; Vols. 157-158; Trans Tech Publications, Switzerland; CSJ Series-Publications of the Ceramic Society of Japan Vol. 1, The Ceramic Society of Japan.	
KP	O57	PANDEY, R., JAFFE, J.E., and KUNZ, A.B.; <i>Ab initio</i> band-structure calculations for alkaline-earth oxides and sulfides; Physical Review B; 04/15/1991; pp. 9228-9237; Vol. 43, No. 11; The American Physical Society.	
KP	O58	CANNEY, S.A., SASHIN, V.A., FORD, M.J., and KHEIFETS, A.S.; Electronic band structure of magnesium and magnesium oxide: experiment and theory; J. Phys. Condens. Matter; 1999; pp. 7507-7522; Vol. 11; IOP Publishing Ltd.	
KP	O59	YAMASAKI, A., and FUJIWARA, T.; Electronic structure of the MO oxides (M=Mg, Ca, Ti, V) in the GW approximation; Physical Review B; 2002; pp. 245108-1 – 245108-9; Vol. 66; The American Physical Society.	
KP	O60	MIKAJLO, E.A., SASHIN, V.A., NIXON, K.L., SEOULE DE BAS, B., DORSETT, H.E., and FORD, M.J.; Band Structures of the Group I and II Oxides: Using EMS Measurements as a Test of Theoretical Models.	
KP	O61	JOHNSON, P.D.; Some Optical Properties of MgO in the Vacuum Ultraviolet; Physical Review; 05/15/1954; pp. 845-846; Vol. 94, No. 4.	

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Examiner Signature	/Kevin Picardat/	Date Considered	06/24/2006
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INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT

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Sheet 6 Of 9

Application Number	10/849,347
Filing Date	May 19, 2004
First Named Inventor	Robert H. Burgener, II
Group Art Unit	2822
Examiner Name	Kevin M. Picardat
Attorney Docket Number	3398.2.8

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Application Number	10/849,347
Filing Date	May 19, 2004
First Named Inventor	Robert H. Burgener, II
Group Art Unit	2822
Examiner Name	Kevin M. Picardat
Attorney Docket Number	3398.2.8

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Sheet 8 Of 9		First Named Inventor	Robert H. Burgener, II
		Group Art Unit	2822
		Examiner Name	Kevin M. Picardat
		Attorney Docket Number	3398.2.8

KP	O110	LEE, J.-M., KIM, K.K., PARK, S.-J., and CHOI, W.K.; Low-resistance and non-alloyed ohmic contacts to plasma treated ZnO; Applied Physics Letters; 06/11/2001; pp. 3842-2844; Vol. 78, No. 24; American Institute of Physics.	
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		First Named Inventor	Robert H. Burgener, II
		Group Art Unit	2822
		Examiner Name	Kevin M. Picardat
		Attorney Docket Number	3398.2.8
Sheet	9	Of	9

KP	O126	JOHNSON, S.; LEDs—An Overview of the State of the Art in Technology and Application; Light Right 5 Conference, May 27-31, 2002, Nice, France.	
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Examiner Signature	/Kevin Picardat/	Date Considered	06/24/2006
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EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached.

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